

Continuities and Transformations: Challenges to Capturing Information about the 'Information Society'

by Fred Gault
and Susan A. McDaniel

Abstract

Continuous change and radical transformations are intrinsic and often contradictory in the 'Information Society.' If the 'Information Society' marks a radical social shift, i.e. discontinuous change, then theorizing what the phenomenon is becomes crucial in capturing useful information about it. Yet, if continuities with other changes, both economic and social, characterize the 'Information Society,' then well-tested information systems might be adapted to collect needed information.

The Organization for Economic Co-operation and Development (OECD) in Paris is working to develop statistics which are both internationally comparable and illuminating of public policy debates on the 'Information Society.' This effort focuses infrastructure and content. For both, goods and services are produced, traded, and consumed by firms and individuals. There are social impacts and inputs. The process, whether of continuous change or radical transformation, of developing 'Information Society' is a social process.

Thus far, OECD has identified information and computing technologies (ICTs) as providing an infrastructure necessary to displaying, moving, processing and storing data, information and codified knowledge. The OECD's ongoing work on indicators for the information society opens possibilities for a discursive sociological examination of the processes involved in, and operative with, 'Information Society' to ask whether and to what extent continuous change exists, and if radical transformation is occurring, how best to capture it. We can, relying on the work of the OECD as a case study, ask crucial sociological questions. Is information society defined and driven by electronic products, or is it a social creation which then requires electronic products? Is the central issue the electronic products, their production and distribution, or is it the electronic networks that deliver them? Is society transforming? What role does knowledge play?

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Introduction

"What differentiates this period from other periods in our history is the extraordinary role played by information and communications technologies" (Greenspan, 2000). If so, has the change been continuous or radical, or both, and what are the means by which we know? If the 'Information Society' marks a radical social shift, i.e. discontinuous change, then theorizing the phenomenon becomes crucial in capturing useful information about it. Yet, if continuities both economic and social, are apparent in the 'Information Society,' then well-tested information systems might be adapted to collect needed information.

Paralleling and partially operationalising this debate is another about the social uses of technologies. Is technology a social savior, a liberator from tiresome work, social isolation and an enabler to social cohesion, or is it a scourge bringing social ills, inequalities and dangers (Stabile, 1994) or, perhaps, elements of both (Henwood et al., 2000; Pimlott, 2000)? These polarities may structure the capture of information about the 'Information Society,' as well as meanings given to technological change and its measurement. Here, we take a neutral stance, that technologies, in particular information and communication technologies (ICTs) or electronic products, such as software packages or MP3 music, have no inherent aspects, good or bad. Social contexts and social engagement give meanings. In this paper, the social context focal point is the OECD's work on capturing internationally comparative data on information society, particularly on the 'electronic information society (e-IS).

Key to this paper is reliance on a discursive examination of indicators development process. In examining the OECD's ongoing efforts to capture data across member countries on information society, we are analysing the process of official data development as a kind of technology. When technologies such as the telephone (Martin, 1991; Silverstone and Hadden, 1996) have been analysed discursively, attention has been drawn to technology's "double life" (Noble, 1977), conforming both to its intended purpose, and "travelling" into unexpected social territory, yielding unintended consequences and unanticipated possibilities. Analysis of idealized images of technologies together with the subsequent social engagement of them, their uses and perceptions in everyday life, is thus possible. Here we view information about ICTs and the process of collection of such information as a kind of technology itself with a parallel double life. On one hand, information about ICTs can be seen as *deterministic*, in having what McLuhan calls "the Midas touch," such that "whenever a society develops an extension of itself" (as surely it does with ICTs and electronic products), then "all other functions of that society tend to be transmuted to accommodate that new form" [1]. On the other hand, information about ICTs and electronic products can be viewed as a social product to be *engaged*, with early uses that are perhaps conservative (as is true for many technologies) and subsequent uses that have more radical potential. Silverstone and Haddon remind us that technologies depend on a "complex pattern of activities in which producers and consumer-users, as well as those who intervene in and facilitate the process of consumption, take part" [2]. The same might be said of information about technologies.

The discursive approach sees the data collection and emerging information system as a kind of text, to be read for interpretative meanings. This is not an inherently critical reading, but entails a distancing from the process of data assembly, to glimpse the process with new eyes, to see its layers more vividly and to discern something of its meanings and contradictions.

We acknowledge, of course, that there are aspects of technologies that are non-discursive, that have very concrete impacts on individuals, communities, public and social institutions and societies. Examples of those are provided below as we deconstruct what is meant by the "Information Society." What is of interest to us here are not these concrete impacts, however, but the detection of tensions between sets of polarities in the construction of an international system of information about information society: continuous change vs. radical transformation, and determinist vs. socially engaged relations.

Crucial sociological questions can be asked with this approach. Is electronic information society defined and driven by electronic products, or is it a social creation which then requires electronic products? Is the central issue the electronic products, their production and distribution, or is it the electronic networks that deliver them? Is society transforming? What role does knowledge play? Information systems are knowledge, with capacity for development of further knowledge, as well as reflecting the contours of a new society. "We are just at the beginning of efforts to understand and quantify some of the salient features of knowledge-intensive societies" [3].

Following the case study analysis, we outline a future research agenda by summarizing what answers exist, to the following:

- What is known and what not known about the e-IS as a social process? What may be acted upon as if known?
- What information is needed? For what purpose? By whom, at what level and place?
- How complete is the existing capture of information?
- How accurately operationalised?
- What are the main barriers to further development of the information base/system?
- How can these barriers be overcome?

Is information about the information society a "societal good"? To what good is this information put? How does this relate to the capture? (Carr, 2001; Dierkes, 2001)



Discourse on the Information Society

Seeing the 'Information Society' as discursively constructed necessitates knowledge about what the term means and how it is used. We here reduce it to components and linkages providing an analytical framework with examples drawn from Statistics Canada surveys.

Challenges to understanding the information society differ across countries. Identifying what can be measured and can support international comparisons matters. Opportunities open for international debate central to a globalising economy and society. The role of building consensus on what should be measured, and what key policy issues to address has been assumed by the Organization for Economic Co-operation and Development (OECD) in Paris.

We explore the work of the OECD as participant observers to consider whether the questions posed here can be addressed and, if not, what needs to be done. We emphasize the OECD's work in the past five years, while acknowledging efforts over twenty years in many countries, to understand and collect data on information society (Dumort and Dryden, 1997; European Commission, 1997; National Telecommunications and Information Administration, 1999; OECD 1998).



Deconstructing Information Society: Actors, Linkages, Outcomes and Impacts

The Information Society consists of *actors* that interact with one another and are governed by sets of

social rules that are continuously being negotiated. Before looking at interactions and rules, the actors are enumerated and some indication is given of what Canada's information system records about their characteristics related to the information society.

In 2000, 53% of *individuals*

in Canada used the Internet at least once (Statistics Canada, 2001a), and there were 51% of *households*

with at least one regular user of the Internet (Statistics Canada, 2001b). In 1999, electronic purchases valued at \$417 million were made from home (Statistics Canada, 2000). Twenty-two percent of households had a cable connection to the Internet which provided 24-hour high-speed service (Statistics Canada, 2001c).

Statistics Canada surveys from which these data come, respond to needs identified by the public and the policy communities (Gault and Peterson, 2001) with financial support from the policy research initiative of the federal government. Activities which change over time are captured, but radical changes occur in networks as well. People rely on the Internet for work and for personal reasons, seeking health information, building electronic communities, and seeking cultural enrichment not possible a short time ago. Social behaviors are changing and wireless communication and the Web facilitate change. That benchmarks for previous periods do not exist prevents full capture over time. Nonetheless, radical transformations in individual behaviors are clear.

Communities

are also actors. Paraphrasing Talcott Parsons, community denotes a wide-ranging relationship of solidarity over a rather undefined area and interests [4]. Networks in geographical communities can strengthen social cohesion by putting library holdings online, Web casting meetings, and providing access points for people without means of connecting to the networks. Students of Mozart and geologists can be connected across the globe so that they can learn, share and add to the body of codified knowledge about their subject. There are consequences, good and bad, of the growth of network facilitated communities, however, including the potential dominance of one language, typically English, consolidation of control and power, expansion of hegemonic North/South relations, and exclusion of those without the means or resources, both tangible and intangible such as literacy, for using the new networks (Castells, 1999; Henwood et al., 2000; Lacroix and Tremblay, 1997; Lipsey, 1996; Pimlott, 2000).

Businesses

are actors too. In Canadian in 2000, 63% were connected to the Internet, 60% used e-mail, 25% had Web sites, 18% bought over the Internet and 6% sold over the Internet (Statistics Canada, 2001d). This is a progression from computer awareness, through readiness to trade on the Web, toward participation in electronic commerce. It is a continuous transformation of business being monitored as change occurs, paralleling the use of cell phones (Chodorowicz and Sciadas, 1998).

Another key statistic is the access of the labor force to Internet. In 2000, 39% of the labor force in Canadian business had access. This shows that workers are being networked, with the potential for radical transformation in how work is done, and how work integrates with home and the rest of life (Stehr, 2001b).

Public institutions

are actors (Diewert, 2001). Governments in Canada lead in changes in the use of information in the workplace and in access by public servants to the Internet. The federal government's initiative to make Canada the most connected in the world by 2004, has led to SchoolNet, the Community Access Program (CAP), VolNet for the voluntary sector, and the development of a coast to coast high performance research network. Efforts exist to put online Canadian content, government information, to promote electronic commerce, and to build 'Smart Communities.' These programs

have impacts on the ways Canadians lead their lives, relate to their governments, and do business.

The flow of information, *linkages*, makes information society, and transforms it. Financial markets provide an example. Before electronic networks, they were more independent. Now, traders are able to move from market to market as one closes and another opens. Day traders can react instantaneously to market changes and market rumors. Trading, and other economic activities, go on 24 hours a day, almost every day.

The *outcomes* of information society are many, and decidedly elusive to capture. They contribute to information society and cannot easily be disentangled for analysis. However, ways of working and uses to which information is put are changed. Information is no longer stored in the heads of workers or in a file drawer, but increasingly accessible to all. Tacit knowledge then moves to a higher level and more skill and education are required if knowledge is to be transferred. As the environment changes, learning to learn about the information society in order to participate may be a significant outcome.

The information society has social *impacts*. With growing numbers of people accessing the Web, new types of interactions are emerging between clients and businesses and between governments and citizens. People are better able to question decisions, challenge expert opinion, and to form lobby groups quickly, the promise of increased democracy through information society. Politicians still present policy in speeches but, by the end of the speech now, commentaries are on the Web offering assessments. Opposition can form quickly and cheaply. Witness the ways in which anti-globalization protests have been mounted through the Web. An example of policy intervention, by use of the Internet, was the halting of the multilateral agreement on investment (MAI).



The OECD and the Information Society

The OECD is a consensus forum of 30 industrialized countries which promotes policy initiatives and fosters public policy debate. It also develops concepts, definitions and statistics which inform public policy debate. Statistical information on the information society has been a priority.

The Information, Computing and Communications Policy (ICCP) committee of the OECD established in 1996 an *ad hoc* working party on indicators for the information society. A pragmatic approach led to defining ICT by industries listed in the International Standard Industrial Classification (UN, 1990). This definition was used for the first internationally comparable compendium on the ICT sector (OECD, 2000). It drew on existing data in the Systems of National Accounts (SNA) of member countries, supplemented by data on research and development. Comparisons were possible of the relative sizes of ICT sectors in OECD countries and investments in the development of new knowledge. Uses of ICT goods and services were not included, nor were the economic or social impacts. The compendium was, however, a significant first step in building indicators for the information society.

The Working Party on Indicators for the Information Society (WPIIS) emerged with classification of ICT goods and services as well as definitions of electronic commerce and guidelines for their application as next steps. Electronic commerce information is to be released in 2001; classification work is ongoing. Full classification is not required to ask businesses, households and individuals about their use of ICTs, such as the Internet, Web, electronic commerce, e-shopping, e-learning, etc. Indicators of both supply (production and trade) and demand by business and households have been developed by Statistics Canada (2001e), a model for OECD work.

Outstanding issues in the OECD's work on information society/economy are content and digital delivery. Electronic version of products from the 'copyright industries' such as the publishing, broadcasting, and motion picture industries, are of interest to some countries. Others are interested in the economic and social impacts of electronic products, from financial services to the monitoring of security systems. In 2001, WPIIS agreed to develop information on the delivery of electronic products, some of which come from the 'copyright industries.' This introduced a new focus, illustrated in Table 1.

Table 1: Electronic and Conventional Orders and Deliveries

Orders and Deliveries	Value of Electronic Deliveries (1)	Value of Conventional Deliveries (2)	Totals (3)
Value of Electronic Orders (1)			Total Value of Electronic Orders
Value of Conventional Orders (2)			Total Value of Conventional Orders
Totals (3)	Total Value of Electronic Deliveries	Total Value of Conventional Deliveries	Total

There has been a policy focus on the values in the first row, which represents electronic commerce, however the product traded is delivered. Interest is now moving to the values in the first column, i.e. the value of products delivered electronically, however they are ordered. In this representation, the 'old economy' is the intersection of row (2) and column (2).

As classification evolves, indicators of the production and use of ICT goods and services will be possible, and then indicators of the purchase, delivery and use of electronic products. A picture of the information economy then will emerge, with analysis possible of the social and economic impacts of ICT products and electronic products displayed, processed, stored and transmitted by the ICT infrastructure.



Issues for the Information Society

From OECD data developed thus far, it is clear that the Internet is here to stay and here to change, transforming as it goes. Differences are apparent in use by individuals and households by income, education, region and language, as well as gender and age. For business, differences occur by firm size, type, and region. Enough is now known to know that some are not participating in the electronic information society, and not benefiting.

The 'digital divide' (OECD, 2001) requires information on both access and quality of access, i.e., slow and suited for email, or high-speed and able to support multi-media animated presentation for teleconferencing, reviewing of medical imaging records, telelearning or entertainment. In Canada, for example, the provision of 'broadband' access to every community is a policy objective for 2004. To monitor that policy, information systems are being developed.

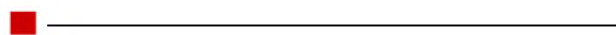
Content is also an issue. Two thirds of respondents regularly using the Internet from home in a 2000 survey of household internet use (Statistics Canada, 2001b) expressed concern about content for those under 18, with pornography cited as a concern. Quality of content is also a concern. Knowledge is useful only if reliable.

More information on content may be developed but this creates measurement challenges. Durkheim has been criticized for "his uncritical acceptance of official statistics, his reliance on coroner's reports and their commonsense definition of suicide" [5]. People could well differ as well in reporting of their use of Web sites not seen as acceptable, or in how reliable the information they find on the Internet.

Information systems have begun to provide information about the electronic information society and social change. As demand grows, so will information systems, as well as guidelines and definitions needed for comparison. The question of continuous or radical change in the information society, however, remains a challenge, although some things are known.

Radical change introduces new observables. Ten years ago there were no electronic tax filers or measures to describe it. They do now, marking a radical change using ICT infrastructure and electronic products such as commercial tax filing packages. Wireless telephony, not commercially available a decade ago, has changed the behaviors of individuals and of businesses. Electronic marketplaces are also evidence of radical change.

Businesses use ICT infrastructure and electronic products to change continuously management practices. They monitor information about clients, suppliers, and production processes so that the firm improves, or alternatively can over-exceed by bubbles of expectations about ICTs and their 'savior' potential. Which is the more radical transformation and which has the greater impact remains a question.



Conclusions and Research Agenda


In this paper, we ask whether and to what extent continuous change exists, and if radical transformation is occurring, how best to capture it. Emerging from the discursive analysis are partial answers. Social construction of information on the information society in relation to policy interests is apparent. Information about access has been a priority, with access presumed as enhancing to transactions and quality of life. Benchmarking is beginning by which change can be assessed. Less emphasis so far has been on the building of communities, to societal networks, or to the impacts of electronic products. Even less attention has been given to activities of the information society as socially engaging, with social impacts and outcomes. Capture of information is incomplete, which is to be expected at this stage, and skewed in its incompleteness. However, information collected is operationalised in accordance with the best survey practices.

The electronic information society, we have seen, becomes meaningful through measurement and the process by which measurement occurs. The 'digital divide,' rapidly becoming part of everyday

vocabulary, emerged from the discursive construction of information systems about the information society. The 'information society' has become part of everyday discourse, even as it is being captured by information systems. The radical transformation may be less in the technologies themselves than in the ways in which they are used to create new kinds of social interactions. This has yet to be tapped by information systems.

Dimensions that emerge as barriers to further development of information about information society fall along six axes:

- Ownership and control: Whose Internet is it and how is it controlled in terms of content as well as access?
- Linkages to other media: Are ICTs part of global media, or separate?
- Accuracy and reliability of information: Is availability the key, or availability to reliable information?
- Space: Who has space on the network? How is space demand accommodated with limited access to some domain names and listservs?
- User agents vs. self-sustaining information societies in countries of the economic South: Can independent information societies develop and be perpetuated?
- Geographic access worldwide: How do we assess who does not have access worldwide?

To overcome these necessitates a widening of the capture net and extension of indicator development to include those on the outside of the digital divide, not only those without access to the electronic information society in the OECD countries, but those whose structural position in the globalizing economy and society has excluded them from participation in the process. 

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Notes

1. McLuhan, 1969, p. 7.
2. Silverstone and Haddon, 1996, p. 44.
3. Stehr, 2001a, p. 5.
4. Marshall, 1994, p. 72.
5. Swingewood, 2000, p. 77.

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